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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,625	02/11/2002	Joseph R. Lakowicz	UMARYI	4325

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EXAMINER

TUNG, JOYCE

ART UNIT PAPER NUMBER

1637

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,625

Applicant(s)

LAKOWICZ, JOSEPH R.

Examiner

Joyce Tung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-57,59,61-67 and 70-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-57,59,61-67 and 70-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/22/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The applicant's response filed 1/25/2006 to the Office action has been entered. Claims 28-57, 59, 61-67 and 70-82 are pending.

1. The rejection of claims 28-82 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention in section 3(a)-(b) is withdrawn.
2. The rejection of claims 28-32, 37-43 and 45 rejected under 35 U.S.C. 102(b) as being anticipated by Kummerlen et al. (Molecular Physics, 1993, Vol. 80(5), pg. 1031-1046) is withdrawn because of the amendment.
3. The rejection of claims 46-82 rejected under 35 U.S.C. 102(b) as being anticipated by Lakowic et al. (WO 99/36779, issued July 22, 1999) is withdrawn because of the amendment.
4. The rejection of claims 33-36 and 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Kummerlen et al. (Molecular Physics, 1993, Vol. 80(5), pg. 1031-1046) as applied to claims 28-32, 37-43 and 45 above, and further in view of Lakowic et al. (WO 99/36779, issued July 22, 1999) is withdrawn because of the amendment.
5. Applicant's arguments with respect to claims 28-57, 59, 61-67 and 70-82 have been considered but are moot in view of the new ground(s) of rejection.

NEW GROUNDS OF REJECTION NECESSITATED BY THE AMENDMENT

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 28-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lakowicz et al. (WO 99/36779, issued July 22, 1999) in view of Kummerlen et al. (Molecular Physics, 1993, Vol. 80(5), pg. 1031-1046).

Lakowicz et al. disclose an assay in which a metal-ligand complex is used to bring into interactive proximity with the sample containing the analyte of interest. The mixture is irradiated with electromagnetic light energy to emit the light, which indicates the analyte of interest (See the Abstract and pg. 6, lines 16-24). The metal complex is a DPPG labeled vesicle (See pg. 12, lines 21-26). The metal-ligand complex is conjugated to human serum albumin (HSA) (See pg. 8, lines 6-8). The distance of the metal complex is 10 to 120 Å with the sample (See pg. 6, lines 16-24). Human serum albumin (HSA) is considered as a second biomolecule and is covalently linked to the metal (See column 21, lines 5-15). The ligand is carbon monoxide (See pg. 54, lines 17-21). The complex comprises of mono, bis or tris(heteroleptic) complexes of Ru(II) and Os(II) and carbon monoxide diimine complexes of Re(I) (See pg. 11, lines 23-26). These teachings suggest that the metal particle is coated with an oxide as recited in claim 32. Lakowicz et al.

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further disclose that the assay is used to quantify the analyte of interest in which a first binding partner and a second binding partner are added to the sample, the first binding partner competes with the analyte to binding to the second binding partner, the first or second binding partner is labeled with a metal-ligand complex and the other is labeled with a photoluminescent energy transfer acceptor wherein the metal-ligand complex and photoluminescent energy transfer acceptor are chosen, when the first binding partner binds to the second binding partner, the metal-ligand complex and the photoluminescent energy transfer acceptor are brought in interactive proximity, producing a detectable change in luminescence (See pg. 53, lines 6-21). The metal-ligand complex typically absorb above 550 nm (See pg. 22, lines 20-22).

Lakowicz et al. do not disclose the metal particle is arranged on a solid support.

Kummerlen et al. disclose enhancement of fluorescence intensity. The dye film is brought into the proximity of the island film support. The resonant excitation phenomenon¹⁵_A due to collective action of the islands (See pg. 1031, the Abstract). The situation of a silver island film is consisted of many individual metal spheroids (See pg. 1032, second paragraph). The excitation wavelengths are 514nm, 488nm and 458nm (See pg. 1033, forth paragraph). The dye is deposited on top of the quartz layer (See pg. 1033, third paragraph). Maximum enhancement is observed for distance around 60-70nm (See pg. 1038, last paragraph).

One of ordinary skill in the art would have been motivated to apply the one or more metal particles arranged on a solid support to make the system as claimed because as taught by Kummerlen et al. the silver island film is presented¹⁵_{by} a suitable model for the effective dielectric constant. It would have been prima facie obvious to apply the one or more metal

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particles arranged on a solid support to make the system as claimed because of the benefit as taught by the teachings of Kummerlen et al.,

8. Claims 46-57, 59, 61-67 and 70-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lakowicz et al. (WO 99/36779, issued July 22, 1999) in view of Kneipp et al. (Curr. Science, 1999, Vol. 77, pg. 915-914).

The teachings of Lakowicz et al. are set forth in section 6 above and Lakowicz et al. do not disclose that the metal particles are selected from the group consisting of rhodium, palladium, silver, iridium, platinum and gold.

Kneipp et al. disclose that the most common Surface-enhanced Raman scattering (SERS) substrates used for biological systems includes colloidal silver particles in solution, 'dry' on a surface or self-assembled into polymer-coated substrates (See pg. 917, column 2, second paragraph). Kneipp et al. further disclose that at near-infrared excitation, colloidal gold clusters can provide an enhancement level comparable to that of colloidal silver clusters (See pg. 918, column 1, first paragraph).

One of ordinary skill in the art would have been motivated to use silver or gold as metal particles in the system of Lakowicz et al. as taught by Kneipp et al. to make the system as claimed because colloidal gold clusters as a substrate ^{are} ~~is~~ used for high^{ly} sensitive SERS, which can provide an enhancement level sufficient for Raman single molecule detection (See pg. 918, column 1, first paragraph). It would have been prima facie obvious to apply silver or gold as metal particles to make the system as claimed.

Summary

9. No claims are allowable.

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10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (571) 272-0790. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joyce Tung J.T./
April 14, 2006


KENNETH R. HORLICK, PH.D.
PRIMARY EXAMINER

4/17/06